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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/025,599

12/18/2001

Robert A. Marshall

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10/04/2006

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EXAMINER

MOORE JR, MICHAEL J

ART UNIT

PAPER NUMBER

2616

DATE MAILED: 10/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/025,599

Applicant(s)

MARSHALL ET AL.

Examiner

Michael J. Moore, Jr.

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 7-18, 20-30, 32-35, 38-41, 43 and 44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17, 18, 20-30, 32-35, 38-41, 43 and 44 is/are rejected.
- 7) ☒ Claim(s) 1-4 and 7-16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement (IDS) submitted on 1/4/06 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner has considered the information disclosure statement.

### ***Specification***

2. The disclosure is objected to because of the following informalities: On page 8, line 9, the word "property" should be "properly".

Appropriate correction is required.

### ***Claim Objections***

3. Applicant is advised that should claim **20** be found allowable, claim **22** will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

4. Claims **1, 35, and 44** are objected to because of the following informalities:

Regarding claim **1**, on line 5, the word "a" before the word "transmitting" is not needed.

Regarding claim **35**, on line 6, the word "the" is needed before "line card".

Regarding claim **44**, on line 5, the word "the" is needed before "line card".

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 17, 18, 20-30, 32-35, 38, 39, 41, 43, and 44 are rejected under 35 U.S.C. 102(e) as being anticipated by Muntz (U.S. 6,532,215). *Muntz* teaches all of the limitations of the specified claims with the reasoning that follows.

Regarding claim 17, “a method for self-testing a portion of a line card having a transmit channel and a receive channel coupled to a combined transmit and receive channel and also having a digital signal processor for manipulating data received by the line card” is anticipated by the network diagnostics mode of the device of Figure 2 containing a transmit channel between DAC 32 and line driver 46 as well as a receive channel between ADC 34 and line receiver 48 coupled via hybrid coupler 50 to a medium 58 (combined channel) as shown in Figure 2 and spoken of on column 4, lines 26-67.

“Transmitting a test signal through at least a portion of the transmit channel toward the combined channel” is anticipated by the transmission of a TDR stimulus pulse 40 (test signal) from DAC 32 to line driver 46 of Figure 2 via multiplexer 42 and on to medium 58 (combined channel) as spoken of on column 8, lines 12-29.

Lastly, "detecting, by the digital signal processor, any resulting signal in the receive channel to determine whether any components in the transmit channel, receive channel, or combined channel are malfunctioning, and further comprising introducing a reflection in the combined channel" is anticipated by the detection of reflections (indicate potential fault conditions) encountered in the signal 40 by DSP 28 of Figure 2 as spoken of on column 8, lines 30-49.

Regarding claim **18**, "terminating the combined channel with a termination circuit having a desired impedance" is anticipated by communication network link 12 (termination circuit) of Figure 2 coupled to medium 58 having an impedance as spoken of on column 9, lines 53-61.

Regarding claims **20-22**, "comparing the detected signal to an expected detected signal" is anticipated by the comparison of the actual characteristic impedances (detected signal) in medium 58 to predetermined characteristic impedances (expected signal) as spoken of on column 10, lines 6-22.

Regarding claim **23**, "filtering the test signal within the portion of the transmit channel" is anticipated by POTS filter 54 of Figure 2 that permits signals to propagate to medium 58 from hybrid coupler 50 as spoken of on column 6, lines 19-25.

Regarding claim **24**, "comparing the detected signal to the filtered test signal" is anticipated by the comparison of the actual characteristic impedances (detected signal) in medium 58 to predetermined characteristic impedances as spoken of on column 10, lines 6-22.

Regarding claim **25**, "wherein the impedance of the termination circuit is approximately the characteristic impedance of an input line to the line card" is anticipated by communication network link 12 (termination circuit) of Figure 2 coupled to medium 58 (input line) having an impedance as spoken of on column 9, lines 53-61.

Regarding claim **26**, "introducing an open in the combined channel" is anticipated by the high impedance fault conditions (open) spoken of on column 10, lines 6-11.

Regarding claim **27**, "terminating the combined channel with a termination circuit having an impedance and providing a switch in the combined channel before the termination circuit" is anticipated by communication network link 12 (termination circuit) of Figure 2 coupled to medium 58 having an impedance as spoken of on column 9, lines 53-61 as well as switch 100 coupled to network link 12 as shown in Figure 4.

Regarding claim **28**, "selectively opening or closing the switch to test the one or more of the components" is anticipated by switch 100 of Figure 4 that permits the transmit signal 40 to be transmitted to the medium 58 without having to propagate through the network 54 as spoken of on column 12, lines 17-27.

Regarding claim **29**, "shorting the combined channel to itself" is anticipated by the low impedance fault conditions (short) spoken of on column 10, lines 6-11.

Regarding claim **30**, "a method for self-testing a portion of a line card having a digital signal processor for manipulating data received by the line card, a transmit channel, and receive channel, and a combined transmit and receive channel coupled to the transmit and receive channels" is anticipated by the network diagnostics mode of the device of Figure 2 containing a transmit channel between DAC 32 and line driver 46

as well as a receive channel between ADC 34 and line receiver 48 coupled via hybrid coupler 50 to a medium 58 (combined channel) as shown in Figure 2 and spoken of on column 4, lines 26-67.

“Terminating the combined channel with a termination network” is anticipated by communication network link 12 of Figure 2 coupled to a communication network as well as a medium 58 (combined channel) as shown in Figure 2.

“Transmitting a test signal through a portion of the transmit channel toward the combined channel” is anticipated by the transmission of a TDR stimulus pulse 40 (test signal) from DAC 32 to line driver 46 of Figure 2 via multiplexer 42 and on to medium 58 (combined channel) as spoken of on column 8, lines 12-29.

“Selectively opening or closing a switch within the combined channel” is anticipated by switch 100 of Figure 4 that permits the transmit signal 40 to be transmitted to the medium 58 without having to propagate through the network 54 as spoken of on column 12, lines 17-27.

“Detecting, by the digital signal processor, any resulting signal in the receive channel after opening or closing of the switch to determine whether any components in the transmit channel, receive channel, or combined channel are malfunctioning” is anticipated by the detection of reflections (indicate potential fault conditions) encountered in the signal 40 by DSP 28 of Figure 2 as spoken of on column 8, lines 30-49.

Lastly, “wherein the receive channel comprises one or more filters and a filter bypass, and selecting, by a second switch, a path for the resulting signal through either

one of the filters or the filter bypass" is anticipated by the sending of a signal by line receiver 48 (second switch) either via filter network 44 (filter) to multiplexer 38, or directly to multiplexer 38 while bypassing the filter network 44 as shown in Figure 2 and spoken of on column 4, lines 61-67.

Regarding claim **32**, "wherein the transmit channel comprises a filter and a filter bypass, and selecting, by a third switch, a path for the test signal" is anticipated by the channel between DAC 32 and line driver 46 of Figure 2 containing a path through filter network 36 as well as a direct path (bypass) to multiplexer 42.

Regarding claim **33**, "comparing the detected signal to the test signal" is anticipated by the comparison of the actual characteristic impedances (test signal) in medium 58 to predetermined characteristic impedances as spoken of on column 10, lines 6-22.

Regarding claim **34**, "comparing the detected signal to an expected detected signal" is anticipated by the comparison of the actual characteristic impedances (detected signal) in medium 58 to predetermined characteristic impedances (expected signal) as spoken of on column 10, lines 6-22.

Regarding claim **35**, "a system for allowing self-test of a line card" is anticipated by the network system 10 of Figure 1 containing device 14 (line card).

"A transmit channel and a receive channel coupled to a combined transmit and receive channel, the combined transmit and receive channel operable to transmit and receive communications with the line card" is anticipated by the network diagnostics mode of the device of Figure 2 containing a transmit channel between DAC 32 and line



driver 46 as well as a receive channel between ADC 34 and line receiver 48 coupled via hybrid coupler 50 to a medium 58 (combined channel) as shown in Figure 2 and spoken of on column 4, lines 26-67.

"A termination network operable to terminate the combined channel and having an impedance" is anticipated by communication network link 12 of Figure 2 coupled to a communication network as well as a medium 58 (combined channel) having an impedance as shown in Figure 2 and spoken of on column 9, lines 53-61.

"A switch on the line card operable to selectively couple the termination network to the combined channel" is anticipated by switch 100 of Figure 4 that permits the transmit signal 40 to be transmitted to the medium 58 without having to propagate through the network 54 as spoken of on column 12, lines 17-27.

"A digital signal processor formed on the line card and operable to manipulate data formed on the line card, the digital signal processor coupled to the receive channel and operable to detect any reflection of a signal transmitted through the transmit channel toward the combined channel" is anticipated by the detection of reflections (indicate potential fault conditions) encountered in the signal 40 by DSP 28 of Figure 2 as spoken of on column 8, lines 30-49.

Lastly, "wherein the transmit channel comprises a filter and an associated switch operable to bypass the filter" is anticipated by the channel between DAC 32 (switch) and line driver 46 of Figure 2 containing a path through filter network 36 as well as a direct path (bypass) to multiplexer 42.

Regarding claim **38**, "wherein the termination network has an impedance approximately equal to a characteristic impedance associated with a telephone line" is anticipated by communication network link 12 of Figure 2 coupled to medium 58 (telephone line) having an impedance as spoken of on column 9, lines 53-61.

Regarding claim **39**, "wherein the combined channel comprises one or more electrical components to be tested" is anticipated by POTS filter 54 as well as switch 100 (components) coupled to medium 58 (combined channel) shown in Figures 2 and 4, respectively.

Regarding claim **41**, "wherein the transmit channel and receive channel are coupled to combined channel by a hybrid" is anticipated by hybrid coupler 50 shown in Figure 2.

Regarding claim **43**, "a method for self-testing a portion of a line card having a digital signal processor for manipulating data received by the line card, a transmit channel, and receive channel, and a combined transmit and receive channel coupled to the transmit and receive channels" is anticipated by the network diagnostics mode of the device of Figure 2 containing a transmit channel between DAC 32 and line driver 46 as well as a receive channel between ADC 34 and line receiver 48 coupled via hybrid coupler 50 to a medium 58 (combined channel) as shown in Figure 2 and spoken of on column 4, lines 26-67.

"Terminating the combined channel with a termination network" is anticipated by communication network link 12 of Figure 2 coupled to a communication network as well as a medium 58 (combined channel) as shown in Figure 2.

"Transmitting a test signal through a portion of the transmit channel toward the combined channel" is anticipated by the transmission of a TDR stimulus pulse 40 (test signal) from DAC 32 to line driver 46 of Figure 2 via multiplexer 42 and on to medium 58 (combined channel) as spoken of on column 8, lines 12-29.

"Selectively opening or closing a switch within the combined channel" is anticipated by switch 100 of Figure 4 that permits the transmit signal 40 to be transmitted to the medium 58 without having to propagate through the network 54 as spoken of on column 12, lines 17-27.

"Detecting, by the digital signal processor, any resulting signal in the receive channel after opening or closing of the switch to determine whether any components in the transmit channel, receive channel, or combined channel are malfunctioning" is anticipated by the detection of reflections (indicate potential fault conditions) encountered in the signal 40 by DSP 28 of Figure 2 as spoken of on column 8, lines 30-49.

Lastly, "wherein the transmit channel comprises a filter and filter bypass, and selecting, by a second switch, a path for the test signal" is anticipated by the channel between DAC 32 (second switch) and line driver 46 of Figure 2 containing a path through filter network 36 as well as a direct path (bypass) to multiplexer 42.

Regarding claim 44, "a system for allowing self-test of a line card" is anticipated by the network system 10 of Figure 1 containing device 14 (line card).

"A transmit channel and a receive channel coupled to a combined transmit and receive channel, the combined transmit and receive channel operable to transmit and

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receive communications with the line card” is anticipated by the network diagnostics mode of the device of Figure 2 containing a transmit channel between DAC 32 and line driver 46 as well as a receive channel between ADC 34 and line receiver 48 coupled via hybrid coupler 50 to a medium 58 (combined channel) as shown in Figure 2 and spoken of on column 4, lines 26-67.

“A termination network operable to terminate the combined channel and having an impedance” is anticipated by communication network link 12 of Figure 2 coupled to a communication network as well as a medium 58 (combined channel) having an impedance as shown in Figure 2 and spoken of on column 9, lines 53-61.

“A switch on the line card operable to selectively couple the termination network to the combined channel” is anticipated by switch 100 of Figure 4 that permits the transmit signal 40 to be transmitted to the medium 58 without having to propagate through the network 54 as spoken of on column 12, lines 17-27.

“A digital signal processor formed on the line card and operable to manipulate data formed on the line card, the digital signal processor coupled to the receive channel and operable to detect any reflection of a signal transmitted through the transmit channel toward the combined channel” is anticipated by the detection of reflections (indicate potential fault conditions) encountered in the signal 40 by DSP 28 of Figure 2 as spoken of on column 8, lines 30-49.

Lastly, “wherein the receive channel comprises one or more filters and an associated switch for selecting either one of the one or more filters or selecting bypass of the one or more filters” is anticipated by the sending of a signal by line receiver 48

(associated switch) either via filter network 44 (filter) to multiplexer 38, or directly to multiplexer 38 while bypassing the filter network 44 as shown in Figure 2 and spoken of on column 4, lines 61-67.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Muntz (U.S. 6,532,215) in view of Itri (U.S. 6,909,781).

Regarding claim 40, *Muntz* teaches the system of claim 39. *Muntz* does not teach wherein one or more electrical components comprise a transformer.

However, *Itri* teaches a DSL line testing system in Figure 8 containing a scaling transformer coupled to hybrid 218.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, given these references, to use a scaling transformer as in *Itri* in the system of *Muntz* in order to provide a way to adjust the voltage of incoming and outgoing signals to an appropriate level.

***Allowable Subject Matter***

10. Claims **1-4 and 7-16** are allowable over the prior art of record.
11. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim **1**, *Muntz* teaches network diagnostics mode of the device of Figure 2 containing a transmit channel between DAC 32 and line driver 46 as well as a receive channel between ADC 34 and line receiver 48 coupled via hybrid coupler 50 to a medium 58 (combined channel) as shown in Figure 2 and spoken of on column 4, lines 26-67.

*Muntz* also teaches a line driver 46 (first amplifier) in the transmit channel as well as a line receiver 48 (second amplifier) in the receive channel as shown in Figure 2.

*Muntz* also teaches POTS filter 54 as well as switch 100 (components) coupled to medium 58 (combined channel) shown in Figures 2 and 4, respectively.

*Muntz* also teaches communication network link 12 of Figure 2 coupled to a communication network as well as a medium 58 (combined channel) having an impedance as shown in Figure 2 and spoken of on column 9, lines 53-61.

*Muntz* also teaches the transmission of a TDR stimulus pulse 40 (test signal) from DAC 32 to line driver 46 of Figure 2 via multiplexer 42 and on to medium 58 (combined channel) as spoken of on column 8, lines 12-29.

*Muntz* also teaches the detection of reflections (indicate potential fault conditions) encountered in the signal 40 by DSP 28 of Figure 2 as spoken of on column 8, lines 30-49.

*Muntz* as well as the other prior art of record do not explicitly teach where the desired impedance is approximately equal to a characteristic impedance of a communication line conventionally used with the line card, where the characteristic impedance is 100 ohms.

Regarding claims **2-4 and 7-16**, these claims are further limiting to claim **1** and are thus also allowable over the prior art of record.

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Chang et al. (U.S. 6,891,803), Czerwiec et al. (U.S. 6,847,702), Norrell et al. (U.S. 7,061,857), and Bliven et al. (U.S. 5,598,455) are other references considered pertinent to this application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Moore, Jr. whose telephone number is (571) 272-3168. The examiner can normally be reached on Monday-Friday (8:00am - 4:30pm).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema S. Rao can be reached at (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael J. Moore, Jr.  
Examiner  
Art Unit 2616

mjm MM

*Seema S. Rao*  
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SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600